Addendum for:

Minitrend V5 and Multitrend Plus V5 User manual 43-TV-25-07 Issue 10

Summary of points covered in this Addendum:

- Ethernet with HP Smart Wand capability
- 10 ohm and 53 ohm copper input actuation
- LS120MByte Super floppy drive
- Password, Security System
- Modbus TCP/IP
- Circular chart
- Other Amendments
    - Language
    - Specification
    - AC Power rating
    - Analogue Input accuracy
    - Analogue Input T/C ranges
    - Battery charging
    - Chassis ground
    - Analogue card current/voltage setup
    - Screen layouts, Replay mode & Mimics
    - Power Up
    - Recorder Set time
    - CJC Calibration
    - Filter
    - Square Root extraction section
    - Temperature Calibration
    - Screen Designer
    - Maths expression
    - 24V dc TX supply back panel
    - Fax number change

Ethernet with HP Smart Wand capability

Communications:

Page 2

‘Barcode/RS232 card.’, removed. ‘For a standard barcode reader that provides an ASCII output use the standard Ethernet/RS232/RS485 card.’, added.

Specifications:

Page 8

‘Barcode interface’, removed. ‘Barcode (ASCII output)’, added.

Communications (Comms):

Page 48

3rd paragraph: ‘For more information on Barcode reader/RS232, see Appendix G - Communications’ on page 131.’, removed

Appendix G - Communications:

Page 131/132

This section has been removed.

10 ohm and 53 ohm copper input actuation

Analogue Input Card table:

Page 9

‘Range: CU53 range 0-150°C’, removed. ‘CU10 range -200 to 260°C’, removed.

Universal card performance: RTD’s:

Page 11

‘CU53’ and ‘CU10’, removed.

‘NB. Cu (Copper 10) requires a different universal input card and is for Cu10 only’, removed.

Thermocouple:

Page 23

10Ω Copper R/T Analogue Card: section removed.

Resistance Thermometers:

Page 63

‘10 Ω Copper R/T Analogue Card:’ removed.

‘An optional universal input card is available for a specific resistance thermometer, CU10 (Copper 10). This card will not access any other type of resistance thermometer inputs or any thermocouple inputs.’, removed.

LS120MB Super floppy option

Introduction:

Page 7

4th paragraph:

'120 Mbyte disk', removed

Storage Media:

Page 7

'LS120 "Super" disk (This drive also accepts 1.4 Mbyte floppy disks)', removed.

Specifications:

Page 8

Storage Data Internal Data Transfer:

'120 Mbyte super disk drive (compatible with standard 1.44 MByte floppy)', removed from ***Minitrend V5*** and ***Multitrend Plus V5***'

Default Start-up Condition table:

Page 13

General Set up: Factory Drives:

'Disk, LS120 (if fitted)', removed. '3.5" floppy disk', added.

Panel mounting:

Page 18

'maximum mounting angle ±15° for LS120', removed.

Multitrend Plus V5:

Page 19

'NB: Maximum mounting angle for LS120 is 15° from horizontal', removed.

Mounting:

Page 20

'Max. mounting angle ±15° for LS120', removed.

Factory:

Page 53

'LS120', removed.

Load layout from Screen Designer:

Page 94

1st paragraph:

'LS120', removed.

System Requirements: *TrendViewer* and *TrendManager Pro*:

Page 99

‘LS120 super drive’, removed.

System Requirements: *Trend Server Pro*:

Page 99

‘LS120 super drive’, removed.

Disk Drive:

Page 101

1st paragraph:

‘LS120 disk’, removed.

Disk Drive Cleaning:

Page 102

1:

‘pre-formatted 120 MByte “Super Disks” from Imation or Maxell’, removed.

3.:Last bullet point: ‘120 Mbyte LS120 Super Disk Drive - use a suitable “wet” cleaning diskette, eg. Imation LS120 cleaning diskette.’, removed

Cleaning Procedure:

Heading and paragraph, removed.

Password

What’s New: Password Protection:

Page 2

‘There are two levels of password security available; Standard Security System (SSS) and Extended Security System (ESS). The password security option must be stated when purchasing the recorder. The recorder will be configured with a code according to which level of password security is required before leaving the factory. *See Password Security System*, added.

Default Start-up Condition table:

Page 13

General Set up: Password:

now reads: ‘SSS Disabled, ESS Enabled’

Extended Security System:

Page 41

New section added after Setup / before Edit)

‘Recorders that have ESS (Extended Security System) enabled, will be denied any further access from the main menu. A default User name and password will be required to proceed, the user name is ‘Eng’ and the password is ‘PASS’. This should only be done be the Administrator who can then enter other users onto the recorder. Please read the section on *Password Security System* to configure the password setup.

Password Security System:

Pages 44 to 47

Password section has been completely re-written: Function:

Protects entry to the system at various levels

Type: Text entry

Description: Restricts access within the recorder, providing password protection at different levels.

Default: SSS disabled, ESS enabled.

There are two password security systems. Read through this section to understand the password system in your recorder. To find out which password system has been configured into the recorder go to the Main Menu and select ***About***. If ESS has a ✓then this is the password security system that is set up. If ESS has a **x** against it, then SSS is the password security system that is set up

The ESS operates similarly to the SSS but with extra security features, these will be detailed during the setup procedure.

Administrator:

It is advisable to allocate an Administrator who is responsible for the password set up and control. The Administrator will be able to create other users and allocate their access levels. The Administrator will also be responsible for removing any lockout situations should a user enter an incorrect password more than 3 times. The Administrator should also be the person who deals with any problems with the password system and will contact the supplier for help.

The Administrator will have the highest access level known as ‘Eng’ status. ‘Eng’ status can be allocated to any user, but it is advised only a limited number of users are given this status as this level has access to change the password system setup.

Standard Security System (SSS) active:

Passwords will be disabled on start up for recorders with the SSS. The user can now access all areas of the recorder without a password except the password setup. Only the Administrator or an ‘Eng’ status user with an initial default password can be entered at this point. When more users are created they will appear on this menu.

Extended Security System (ESS) active:

On a recorder with ESS enabled, access will be denied from the main menu. When entering the recorder for the first time you will be prompted for the default user name and password. The default user name is ‘Eng’, and the default password is ‘PASS’. This should only be done be the Administrator who can then enter other users onto the recorder. The extended high security features for this option are listed in *“Extended Security System”.* ESS access will always be denied from the main menu, and the password system cannot be disabled.

Extended Security System (ESS) features:

ESS has extended high security features which include:

- Password retry Lock out: If the user enters the incorrect password more than 3 times, then the user will be “locked out” until a master reset is performed on the password. Contact your Administrator.
- No reuse for: User configurable, set the number of times the user will ***not*** be allowed to use the same password. Enter a number from 4 to 12 times.
- Expires in (days): User configurable, set up how long a password will be valid for, enter a number from 1 to 190 days.
- Time out in (mins): User configurable, this function returns the screen to a process screen if the recorder is unattended for a set period of time. Enter a number from 1 to 10 minutes.

Table 1: Password Security

Security System Features	ESS	SSS
Enable/disable password		✓
Options features	✓	
Password re-entry lockout	✓	
No re-use for (4 to 12 times)	✓	
Expires in (days) 1 to 190 days	✓	
Time out in (mins) 1 to 10 minutes	✓	
Number of users = 10		✓
Number of users = 20	✓	
Enter user name from pick list		✓
Type in user name	✓	

Password user level information:

’Eng’ status, is the highest level of access. From here the Administrator, at ‘Eng’ status, can allocate other users and their levels of access to screens within the recorder. Once a user has been entered into the recorder, by the Administrator, they will be required to provide a password of their choice when the user first logs in. The user can change their password at any time, *see “Change Password”*. Each user, including ‘Eng’ status users are responsible for remembering their own password.

NB. The Administrator cannot access the passwords for other users.
If the user does forget the password the user must be deleted from the recorder and start again. If the Administrator forgets their password and no access is available, contact us at **Honeywell** to issue an override password/user name, subject to prior arrangement. The on screen date (top right) will be required before an override password or user name can be supplied. In addition to this, for ESS only, the serial number will also be required, this can be found in the About menu.

- Maximum length of User name = 8 characters
- Maximum length of Password = 6 characters

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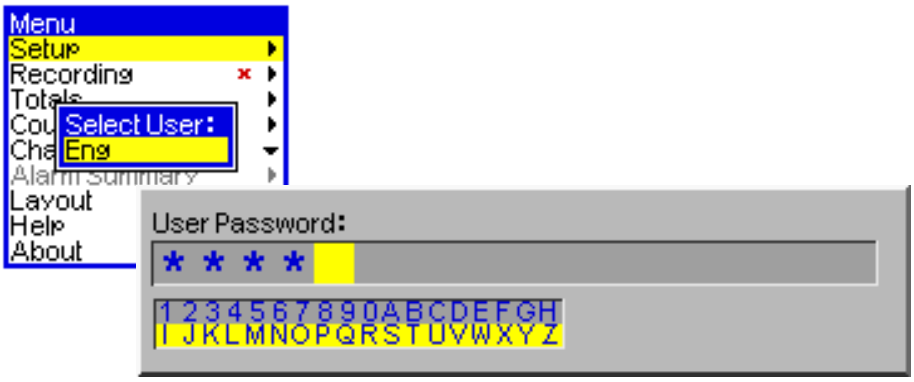

Menu
Setup
Recording
Totals
Select User:
Eng
Layout
Help
About
User Password:
1 2 3 4 5 6 7 8 9 0 A B C D E F G H
I J K L M N O P Q R S T U V W X Y Z

Traceability:

This password system allows traceability by the users name, not the password.

The messages screen will keep a record of all entries made into each level, by user name, and if access has been accepted or denied.

Password Enable (SSS only):

From the ***General*** menu select ***Password*** and tick to enable. Not available on recorders with ESS.

Options (ESS only):

For recorders set up with SSS, this function will be greyed out.

No Reuse for

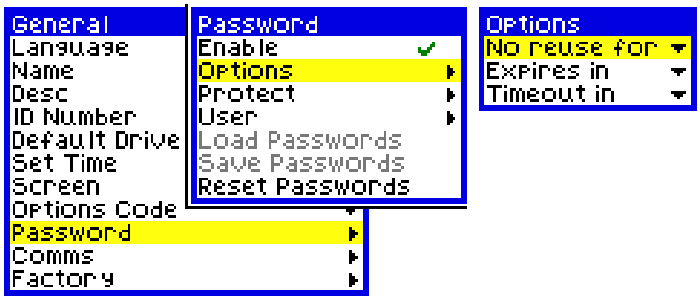
The user will ***not*** be allowed to use the same password as they have done for at least 4 previous changes, enter between 4 and 12 times.

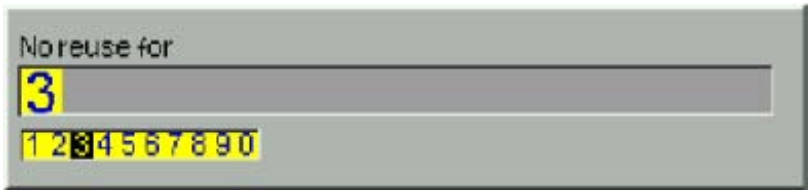
Expires in (days)

Set up how long a password will be valid for. A set number of days between 1 and 190 can be entered after which a users password will expire. A new password will then be required, having provided the old one, before accessing any other functions.
Enter the number of days before expiry 1 to 190 days.

Time out in (mins)

This function returns the screen to the previous process screen if the recorder is unattended for a set period of time. If a user logs on to perform a specific task and does not perform any action within a specified time, 1 to 10 minutes, then the recorder will return to a normal safe state (previous process screen) automatically logging the user off. If the user is configuring a setup in the recorder and does not finish within the time allowed, all changes for that log will be lost. Enter how many minutes between 1 and 10, before the process screen returns and log off is automatically executed





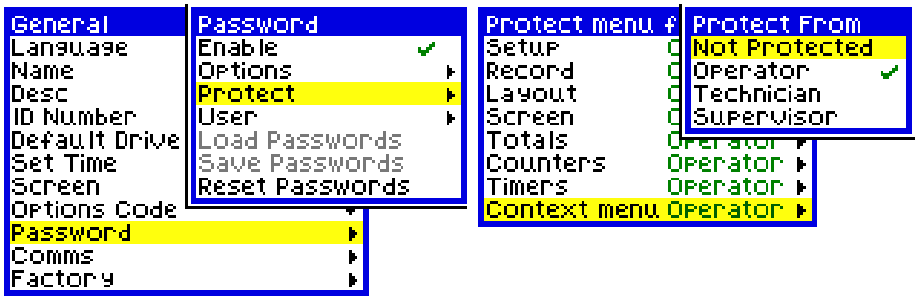
Protect:

These menus are only available to the Administrator and other 'Eng' status users.

There are seven areas in the recorder which can be protected from users. Access to these areas can be assigned using the ***Protect*** and ***Protect menu from*** menus.

Select each of the seven areas, ***Setup, Record, Layout, Screen, Totals, Counters*** and **Context menus***.** Decide at which user level each area is to be protected from, user levels are: ***Operator, Technician*** or ***Supervisor***. ***Not Protected*** will enable access to all areas except the password option.

Context menus* are hidden menus that have to be activated in order to appear on the screen. They are embedded in the main display chart, digital panel meters, bars and the messages screen. Rotate the thumbwheel and press enter on any of these to activate the ***Context menu***



There are four levels of user:

- Engineer (Eng) - Highest access level including Supervisor, Technician and Operator.
- Supervisor - 2nd highest level including Technician and Operator access
- Technician - 3rd level including Operator access
- Operator - 4th and lowest level of access

Notice the menu is labelled '***Protect menus from***', this table shows how to assign access. ***Protect menu from*** includes the highest user specified. i.e. if ***Setup*** is protected from the ***Supervisor***, neither the ***Supervisor's, Technician's*** or the ***Operator's*** passwords will work, so only the ***Engineer*** has access.

The ***Operator*** is the default access to the recorder, this is the lowest level, anybody using the recorder will have this level of access.

The password system is based around the following priority hierarchy.

Priority table		
Top level	-	Engineer
	-	Supervisor
	-	Technician
Bottom level	-	Operator

Access only	Protect From enter	No access to
Engineer	Supervisor and below	Supervisor, Technician, Operator
Engineer and Supervisor	Technician and below	Technician and Operator
Eng, Super, Technician	Operator and below	Operator
Eng, Super, Tech, Operator	Not protected	Access to all users

Password Entry:

Access for 'Eng' status users only. For recorders with SSS, when entering this menu for the first time you will be required to provide the default password.

The Administrator or other 'Eng' status users have access to these menus and can create up to 20 user names for ESS and 10 user names for SSS, ***all User names must be different***. Maximum length of user name is 8 characters. Each user must have a level assigned to them, Technician, Supervisor or Engineer. Once the user is created they must provide a password of their choice when they first log on to the recorder, maximum length of password 6 characters.

Enter New User (Administrator use)

All new users have to be entered on to the recorder, and their access level set. This should be done by the Administrator as they have 'Eng' status and access to this menu.

Select ***User*** from the Password menu and select a free ***(No User)*** from the menu, then select ***Create User*** to produce the User name entry box. The ***User Details*** menu appears, first enter the ***User Name***, press the ACCEPT button for the menu to return. Maximum length of user name is 8 characters. Then select ***Level***, highlight and select the level of access assigned to that user. When all the users are added and their protection level assigned, then press FINISH and APPLY.

Delete User (Administrator use)

Select the desired user from the list and press enter, highlight ***Delete User*** an press the enter button. The user is immediately deleted.

User entry

When the user logs on to the recorder for the first time, they will be prompted to enter a new password. New passwords must be re-entered to confirm, 6 characters max.

Once a users password is entered their allocated level will immediately apply and they will only be able to access the areas set up by the Administrator.

Each user, including the Administrator is responsible for remembering their own password. The Administrator or any other person with 'Eng' status cannot access the passwords for other users. If the user does forget the password the user must be deleted and start again.

Users can change their password at any time, *see Change Password*

Change Password:

Page 91

'Select User' menu image, removed.

Changing an Existing User Password:

This section now reads:

'This is where the user can change their password, at any time.

The user must already be entered on to the recorder and have an existing password. *See 'Passwords'.*

Select ***Change Password*** then enter the ***User*** name. Enter the current password, then enter the new password. This has to be re-entered to confirm the new password.

The new password is now in the system and will be required when the user logs on.'

Modbus TCP/IP

New Communications:

Page 1

Bullet points: now read:

- 'Ethernet/Trendbus RS485/RS232 card, and Modbus TCP/IP using Ethernet (with Modbus X option), Web browser and FTP.capabilities.
- 'Comms card 2 featuring Modbus RS485 (with Modbus X option) and Profibus protocols.'

What's New:

Page 2

Communications: now reads:

'There are two communications cards available, the first is the standard comms card, that provides Ethernet, Trendbus RS485, RS232, Modbus TCP/IP using Ethernet, (with Modbus X option), Web browser and FTP. The second is comms card 2 which can be used for Modbus RS485, with Modbus X option, or Profibus protocol.

Ethernet connection on the ***Minitrend V5*** and the ***Multitrend Plus V5*** recorders also have Web, WAP and E-mail facility as an option. All communications are managed by a Communications server, only available with ***TrendServer*** software option.

Modbus X:

Page 2

This section is added below Communications:

Modbus X differs from standard Modbus only by the floating point 4 byte order being reversed for application compatibility. Modbus X runs on the Ethernet using the Modbus TCP/IP option, on the standard comms card or through Modbus RS485 on comms card 2.'

Specifications: Communications:

Page 8

Standard Communications card:

'(including Modbus TCP/IP through Ethernet, with Modbus X option)', added.

Communications: Communications card 2:

'(including Modbus X option)', added.

Main Features:

Page 12

Recorder Function:

Top item now reads: Standard comms card with Ethernet and Modbus TCP/IP through Ethernet, Trendbus RS485 and RS232. Modbus TCP/IP has Modbus X option.

Comms card 2 with Modbus RS485, and Profibus protocols. Modbus RS485 has Modbus X option.

Standard Ethernet/Trendbus RS485/RS232 card:

Page 27

Heading amended to 'Standard comms card'

This card provides Ethernet, Modbus TCP/IP through Ethernet, with Modbus X option, Trendbus RS485 and RS232 communications ports.

'This is the RS485 Trendbus/RS232/Ethernet.', removed from paragraph.

Figure 3.1:

under 'Ethernet 8-way RJ45', 'and Modbus TCP/IP' added.

Ethernet Interface:

Page 28

'Ethernet interface', now is 'Ethernet/Modbus TCP/IP Interface'

Communications Card 2:

Page 29

1st paragraph:2nd line:

now reads:

'There is an RS232 9-way D type connection for Profibus and a 3-way klippon type connector for Modbus RS485 (and Modbus X option).'

Modbus RS485 Interface:

heading now reads: 'Modbus RS485 Interface & Modbus X option)

Communications (Comms):

Page 48

Heading now reads: ‘Standard comms card’ ‘This card provides Ethernet, Modbus TCP/IP through Ethernet with Modbus X option,

Paragraph 3:now reads:

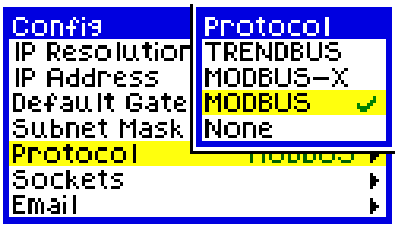
Ethernet with Modbus TCP/IP and Modbus X option, Trendbus RS485 and RS232 are all options which can be added to the ***Minitrend V5*** and the ***Multitrend Plus V5*** at any time by adding a standard Communications card. For more information on Barcode Reader/RS232, see ‘*Appendix G - Communications’.*

Protocol:

Page 49

New Image:

Section now reads:



‘Protocols define the format in which the data is transferred from the recorder to a PC or transfer between other devices and peripherals. The protocol options for the standard comms card are ***Ethernet, Trendbus RS485*** or ***Modbus TCP I/P.*** Modbus TCP/IP is through the Ethernet connection with the ***Modbus X*** option. If neither are required select ***None***. If None is selected, Ethernet can still be used for FTP down load or HTTP web browser. The None option just de-selects Trendbus, Modbus or Modbus X without disabling the default options. See “Communications” on page 3’.

Sockets:

Page 49

3rd paragraph:

‘Select Modbus for Modbus X.’, added

Comms card 2 for Modbus RS485 and Profibus:

Page 52

Heading now reads:

‘Comms Card 2 for Modbus RS485 with Modbus X option and Profibus’

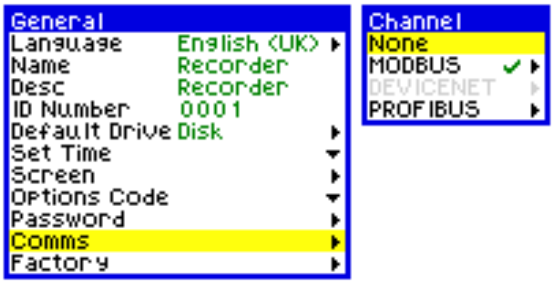
1st paragraph now reads:

This communications card 2 provides ***Modbus RS485*** with ***Modbus X*** option or ***Profibus*** protocols or channels used for communications. Only one Protocol or channel can be operational at a time, either ***Modbus RS485*** or ***Profibus***.

5th paragraph now reads:

To activate the comms card in the recorder, select the ***Set up*** option from the main menu, then ***Edit***. Select ***General*** followed by ***Factory.*** From the factory menu select ***Comms Ports***, a menu will appear showing the available ports. Select a port, press Finish and Apply. Return to the general menu.

Select ***Comms*** and activate the desired option. The recorder now knows that a comms card is installed in the recorder, and what comms options are available, see *"Comms port".*



Once returned to the General menu, select ***Comms***. Choose either ***None, Modbus*** or ***Profibus, Modbus X*** is accessible through the Modbus option.

Refer to the Communications manual for Modbus memory map addresses.

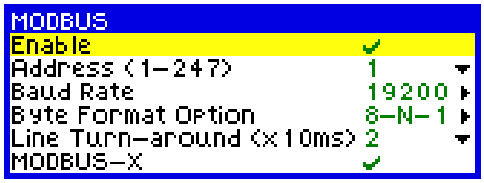
MODBUS:

Page 52

Heading now reads **'MODBUS RS485'**.

1st paragraph now reads:

'MODBUS RS485 protocol defines a message structure that controllers will recognise and use, regardless of the type of networks over which they can communicate. ***Enable*** to activate the menu.'



The paragraph below is new and has been added to end of this Modbus section:

'Modbus X differs from ***Modbus RS485*** only by the floating point 4 byte order being reversed for application compatibility.'

Comms Ports:

Page 56

3rd paragraph: now reads:

'If the ***Comms Card 2*** is fitted this menu will be disabled. The comms card 2 uses ***Modbus RS485***, with ***Modbus X*** option, and ***Profibus*** protocols, but only one is available at a time. *See "Comms Card 2 for Modbus, Modbus X and Profibus".'*

Software:

Page 97

Software: Features: 19:now reads:

'Communications Card 2 for ***Modbus RS485*** with ***Modbus X*** option and ***Profibus*** protocols.'

Software: Features: Item 22 added:

'Standard Communications Card for ***Ethernet/Trendbus RS485*** and ***RS232*** now has ***Modbus TCP/IP*** capabilities through Ethernet, with ***Modbus X*** option.'

Page 98

Software: Features: table:

'Communications Card 2 for ***Modbus RS485*** with ***Modbus X*** option and ***Profibus*** protocols.'

Software: Features: table:

'Standard Communications Card for ***Ethernet/Trendbus RS485*** and ***RS232*** now has ***Modbus TCP/IP*** capabilities through Ethernet, with ***Modbus X*** option.' added.

Circular chart

What's New?

Page 3

A ***Circular chart*** display is now available on the ***Multitrend Plus V5***. The circular chart can be set up to display many different time durations from 1 hour to 96 weeks. Standard pre-defined chart durations have been set up for ease of use, plus a user defined option to create alternative chart durations to suit specific applications. Choose to overwrite the chart or create a new chart when each duration is complete. Display includes digital readings of all pens displayed on the chart plus events and mark on chart facility. *See 'Screen Displays*'.

Screen Displays

Page 36

new section added:

Circular chart

One of the latest features unique to the ***Multitrend Plus V5*** is the circular chart. The circular chart starts at the top, at the 12 o'clock position, and moves round in a clockwise direction. All pens that have been enabled will display as a trend on the circular chart and as a digital reading. Full recorder status is displayed showing the screen and recorder names, time and date readings and memory, disk and alarm status indicators. Full replay facility is available to enable the user to scroll back through previous data.

The duration of the chart can be set from a pre-defined selection of chart duration times or the user defined option can be used to setup a specific time span for the length of the chart. Once the chart has completed its full 360° circuit, the chart can be set to either overwrite, by clearing the next section ahead, or a new chart can be created.

Chart Divisions

The chart divisions for the pen scale are taken from the first pen being displayed. The divisions for each scale have to be set up in the configuration for each individual pen, as with other chart modes. So if pen 1 is the first pen displayed with a scale of 0-50, with a major division at 25 and minor divisions every 5, then this is the scale that will be displayed for the whole chart. Each pen will have its own scale displayed next to the corresponding pen colour. *see Pen Scale*. The time divisions are automatically calculated depending on the full time duration of the chart.

Pen Identifier

Each enabled pen can be located on the circular chart by a small oblong of colour on the outer edge of the graph corresponding to the colour of that pen, this is the pen identifier. The first pen identifier is placed at the top of the chart and each subsequent pen is then placed equally around the chart in a clockwise direction.

Pen Scale

Each pen that is being displayed will have its own scale next to the corresponding pen identifier. The scale for each pen may be different, the chart can only display one set of divisions and that will be defined by the first pen being displayed.

Marker Identifier

The ***Marker Identifier*** is a letter that is placed on the outer edge of the circular chart when something has occurred, different markers indicate different things have happened.

'P' - Power fail

'S' - Set up change

'R' - Reset chart

'E' - Event list (including a triggered alarm)

'?' - Unknown

'a to t' - User defined marker. This marker is used to indicate a user-defined event. As each user-defined mark is placed a letter will appear starting with the letter 'a' through to 't'

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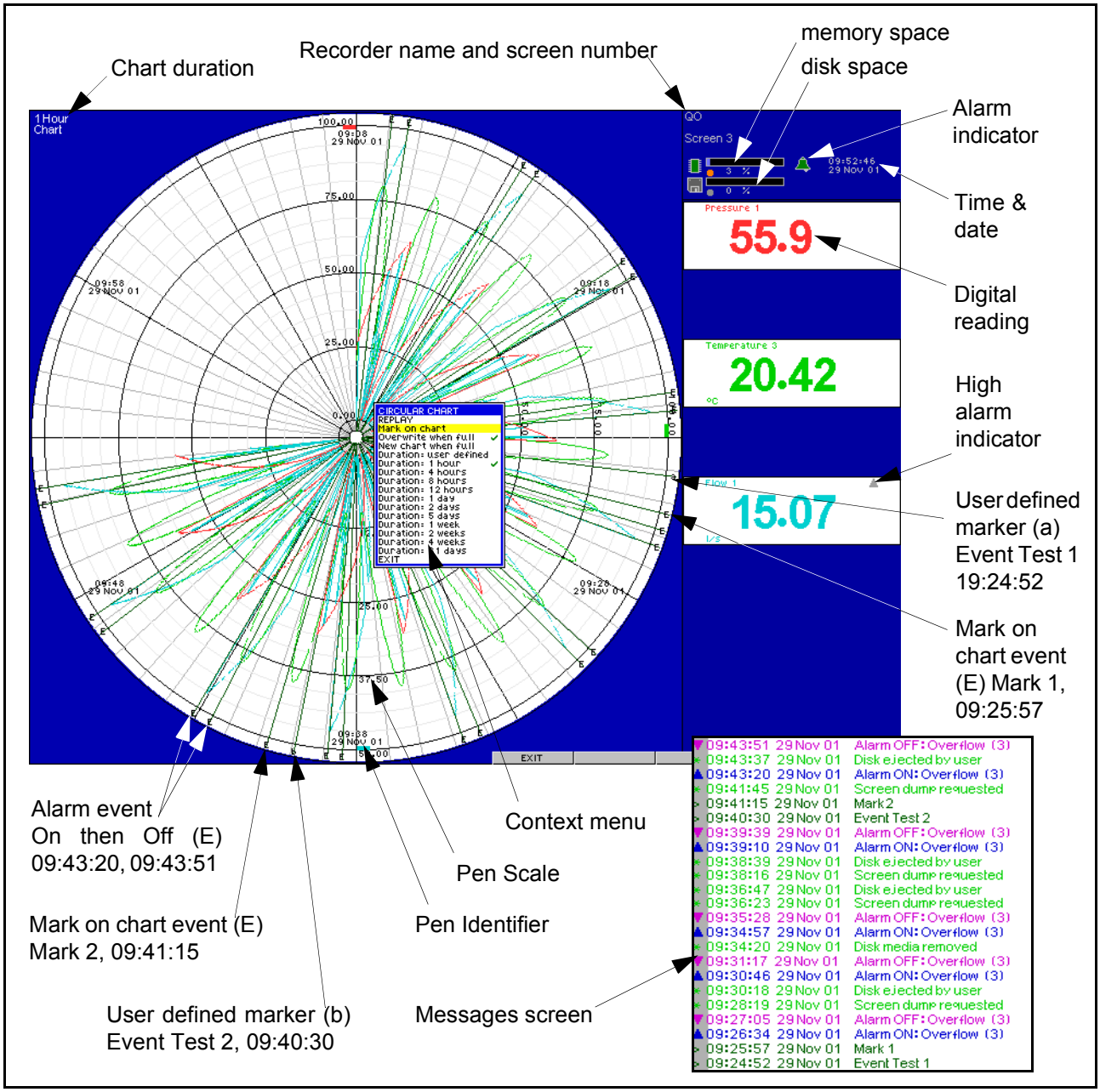


Chart duration
Recorder name and screen number
memory space
disk space
Alarm indicator
Time & date
Digital reading
High alarm indicator
User defined marker (a) Event Test 1 19:24:52
Mark on chart event (E) Mark 1, 09:25:57
Alarm event On then Off (E) 09:43:20, 09:43:51
Mark on chart event (E) Mark 2, 09:41:15
User defined marker (b) Event Test 2, 09:40:30
Context menu
Pen Scale
Pen Identifier
Messages screen
1 Hour Chart
Screen 3
Pressure 1
55.9
Temperature 3
20.42
Flow 1
15.07
CIRCULAR CHART
REPLAY
Mark on chart
Overwrite when full
New chart when full
Duration: user defined
Duration: 1 hour
Duration: 4 hours
Duration: 8 hours
Duration: 12 hours
Duration: 1 day
Duration: 2 days
Duration: 5 days
Duration: 1 week
Duration: 2 weeks
Duration: 4 weeks
Duration: 31 days
EXIT
09:43:51 29 Nov 01 Alarm OFF: Overflow (3)
09:43:37 29 Nov 01 Disk ejected by user
09:43:20 29 Nov 01 Alarm ON: Overflow (3)
09:41:45 29 Nov 01 Screen dump requested
09:41:15 29 Nov 01 Mark 2
09:40:30 29 Nov 01 Event Test 2
09:39:39 29 Nov 01 Alarm OFF: Overflow (3)
09:39:10 29 Nov 01 Alarm ON: Overflow (3)
09:38:39 29 Nov 01 Disk ejected by user
09:38:16 29 Nov 01 Screen dump requested
09:36:47 29 Nov 01 Disk ejected by user
09:36:23 29 Nov 01 Screen dump requested
09:35:28 29 Nov 01 Alarm OFF: Overflow (3)
09:34:57 29 Nov 01 Alarm ON: Overflow (3)
09:34:20 29 Nov 01 Disk media removed
09:31:17 29 Nov 01 Alarm OFF: Overflow (3)
09:30:46 29 Nov 01 Alarm ON: Overflow (3)
09:30:18 29 Nov 01 Disk ejected by user
09:28:19 29 Nov 01 Screen dump requested
09:27:05 29 Nov 01 Alarm OFF: Overflow (3)
09:26:34 29 Nov 01 Alarm ON: Overflow (3)
09:25:57 29 Nov 01 Mark 1
09:24:52 29 Nov 01 Event Test 1

Circular chart context menu

Rotate the thumbwheel to produce the cursor arrow then press the thumbwheel in to activate the context menu. The context menu contains options for the circular chart display:

Replay - Replay mode can easily be identified as the chart background becomes grey. Rotate the thumbwheel one click to scroll back through the previous chart data section by section (overwrite mode) or screen by screen (new chart mode).

Mark on chart - A mark can be placed on the chart manually by selecting this option and providing a suitable caption that will appear in the messages screen. A line will be placed onto the chart reaching to the outer edge where a marker identifier is placed. *See 'Marker Identifier'*

Overwrite when full - This is the default setting for the circular chart as opposed to the 'New chart' option. The chart is full when it has completed its 360° rotation, and the chart has returned to the top. With the overwrite option selected the first section of the chart will be cleared for the new data to write on. When the current data reaches the next section this in turn will be cleared for the new data. This process will continue for all subsequent sections continuing round the graph.

New chart when full - When the chart has completed its full 360° operation and returned to the top, the existing graph will clear and a new graph will be started from the 12 o'clock position.

Durations, pre-defined - For ease of setup, a selection of popular chart lengths have been pre-defined and set into this context menu: 1 hour, 4 hours, 8 hours and 12 hours: 1 day, 2 days, 5 days and 31 days: 1 week, 2 weeks, and 4 weeks. Select the user defined option to enter other chart lengths. The default chart duration is 1 hour.

Duration: user defined - A selection of pre-defined time periods for the length of the chart have been created and set into this context menu. The default chart duration is 1 hour. Should the user required a different chart length, then this option can be used. The duration refers to the length of time it takes for the chart to complete a full 360° revolution, starting and returning to the 12 o'clock position. Use the thumbwheel to highlight and select this option to produce the chart duration menu. Select from Weeks, Days or Hours.

Hours range from 2 to 36 hours (for 1, 4, 8 & 12 hours select pre-defined)

Days range from 3 to 30 days (for 1, 2, 5 & 31 days select pre-defined)

Weeks range from 3 to 96 weeks (for 1, 2 & 4 weeks select pre-defined)

Other Amendments

Languages:

Page 2

Now reads: 'Recorder firmware has these language variants'

'Portuguese (Braz)', added.

Specifications:

Page 8

Operating temperature: 0 to 40°C

Power supply: 90 - 250 Vac

Power consumption: ***Multitrend Plus V5***: <50VA (ac), <50W (dc) Max.

Analogue Input Card:

Page 9

Accuracy: ± 0.2% of full span

Analogue Input card, Thermocouple table in °C:

Page 10

T/C type K range is -200 to 1350

T/C type R range is -50 to 1750

T/C type S range is -50 to 1750

T/C type B range is 100 to 1820

T/C type J range is -200 to 1190

New range:

Nickel Copel -50 to 1360

Analogue Input card, Thermocouple table in °F:

Page 10/11

T/C type B range is 212 to 3308

T/C type J range is -328 to 2174

New range:

Nickel Copel -58 to 2480

Battery Charging

Page 17

This section added:

The backup time of the system is dependent on two main parts, the battery and the memory (DRAM). The battery being the source of the power and the DRAM being the power user, both these can vary by batch.

When the battery is fully charged and the recorder powered on the battery will not lose any charge, if the recorder is switched off the battery will slowly discharge whilst it is keeping the memory (DRAM) running. You can expect the battery to hold the setup in the memory for up to 10 days in a ***Multitrend Plus V5*** and up to 20 days in the ***Minitrend V5*** with a fully charged battery. On the 11th or 21st day, depending on the type of recorder, the memory (DRAM) will be gone.

If the recorder is switched on for short periods and then off for longer periods, charge will be used from the battery to power the memory (DRAM) during the time the recorder is powered off. Eventually the battery will be discharged completely and the memory will be lost. The battery can be recharged in 96 hours but if the battery has been left to discharge completely, (recorder in the power off state) permanent damage may be caused to the battery and can never be returned to its fully charged state.

For the best possible battery life, 10 years+, leave the recorder powered on. Or if the recorder is powered off regularly, re-charge the battery regularly. See ‘Battery Isolation’ on page 18.

Battery Isolation

(Minitrend V5 only)

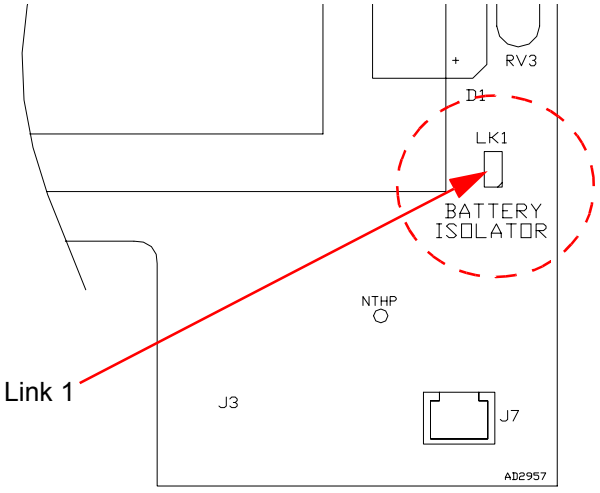
New section added:

> **WARNING**
> HAZARDOUS VOLTAGES
> Disconnect all power to the recorder before removing the back panel and attempting any maintenance procedures.
> Failure to comply with these instructions could result in death or serious injury

> **CAUTION**
> OBSERVE ANTI-STATIC PRECAUTIONS
> Refer to BS EN1000151:1992. Basic specification. Protection of electrostatic sensitive devices.
> Full anti-static precautions MUST be observed when in contact with the electronics of your recorder.
> Failure to comply with these instructions may result in product damage.

To save the life of the battery during prolonged storage times it is recommended a link is disconnected on the Power Supply card.

Locate Link 1 (LK1) on the Power Supply card, do not completely remove the link as it will have to be reconnected when the recorder is ready for use. Simply pull the link up, turn it 90° and refit leaving only one pin connected. This will disconnect the link and ensure the link does not get lost.



Power Supply Card

The shelf life ‘un-powered’ for NiMH batteries, is between 50 to 90 days, therefore its is always necessary ensure the minimum of 48 hour charge for the battery before it reaches working capacity.

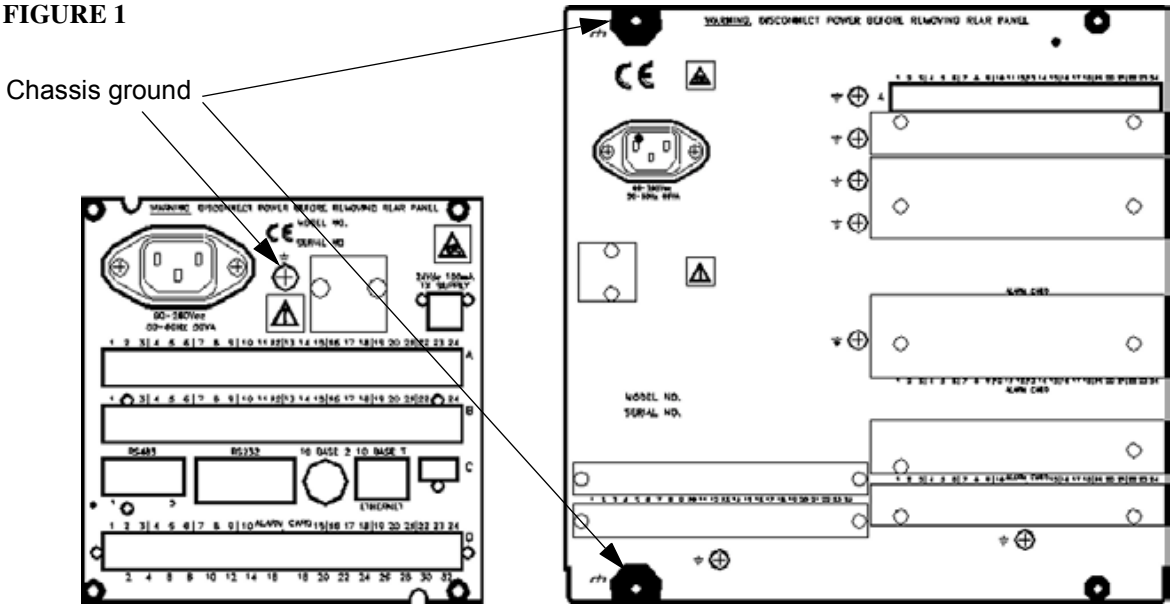
Electrical:

Page 21

AC Power: 90 - 250 Vac.

'Figure 1 on page 21' now shows chassis ground points.

FIGURE 1



Minitrend V5 AC rear panel

Multitrend Plus V5 AC rear panel

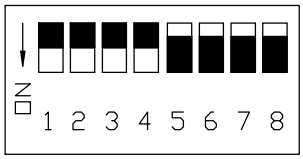
Page 23

New section added

Linear Input card (*Minitrend V5* only)

The number of channels that can be used depends on the model and the customer specification. Available channels start at channel 1 (CH1) and continue up to the number of channels specified. The ***Minitrend V5*** has a range of channels available from 4 to 16. Each card position is identified as 'A' and 'B' on the rear panel, for ***Minitrend V5***. Each card can deliver up to 8 channels of input with the top slot (A) primarily being occupied by a linear input card. If a Universal analogue card is also fitted this will take up position in the second slot (B) on the ***Minitrend V5***. Both slots can be either linear input or universal analogue inputs with a maximum of 16 channels.

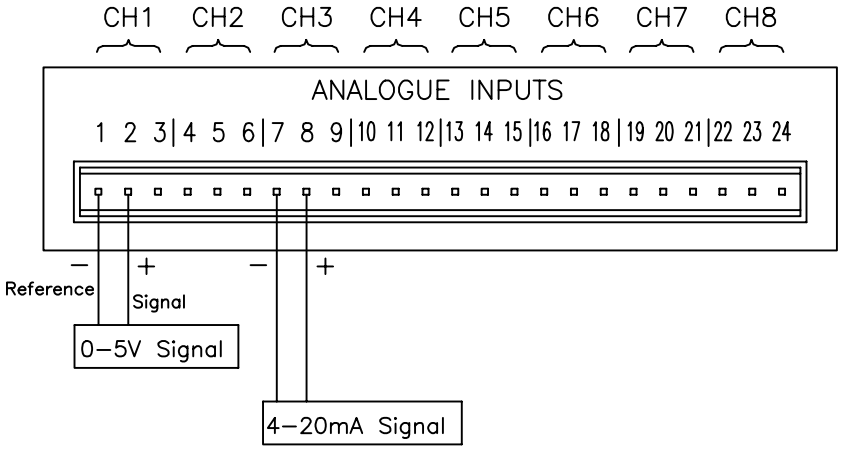
Set Current or Voltage switches



The ten ohm shunt resistors for mA input ranges are switched and the switches are located on the side of the recorder. Numbering from 1-8 corresponds to the pen of the same number.

- Down position = Resistor selected for mA input
- Up position = Resistor not selected for all voltage, T/C or R/T input.

The example below shows a 0-5 Volt device connected to channel 1 and 4-20mA device connected to channel 3.



For 24-way connector; torque setting 0.4Nm/3.5lbf-in. Do not over tighten.

Analogue Card

Page 23

Heading now reads **'Universal Analogue Card'**

New 1st paragraph:

The ***Minitrend V5*** and ***Multitrend Plus V5*** can both have the Universal Input card fitted. The ***Multitrend Plus V5*** has a channel range from 8 to 32. The connections are made via a 24-way screw terminal plug which fits into the PCB header at the rear of the recorder. For the ***Multitrend Plus V5*** there can be up to four cards in positions A, A1, B and B1. The ***Multitrend Plus V5*** has four positions for analogue inputs again with the top slots (A, A1) being reserved for the standard card and any universal cards taking up the lower positions (B, B1). All slots can be either standard or universal analogue up to a maximum of 32 channels of input. If a Universal analogue card is fitted into a ***Minitrend V5*** this will take up position in the second slot (B) on the ***Minitrend V5***. Both slots can be either linear input or universal analogue inputs with a maximum of 16 channels.

2nd paragraph now reads:

'The Universal Analogue card is used for connecting a wider range of input signals to a unit, typically thermocouples or resistance thermometers.

Screen Layouts:

Page 32

2nd to last sentence now reads: 'Rotate the thumbwheel when a chart is displayed, and a cursor will appear. Press the thumbwheel to produce a context menu, here the chart rate can be selected.'

Chart display with digital panel: Chart speed reset:

'(context menu)', added

Page 33

Bars:

Last sentence now reads: ‘Press the thumbwheel in to produce a context menu, here the bargraph min/max levels can be reset.’, added.

Replay Mode:

Page 34

3rd sentence: now reads ‘This is activated by rotating the thumbwheel to produce the cursor arrow, press the thumbwheel to generate the context menu.’

Screen image: bottom left caption now reads: ‘Context menu showing replay option’.

Mimic Displays:

Page 37

‘Mimic displays are not standard and must be purchased as an option.’, added.

Power Up:

Page 38

‘If there are no other screens available, see “Layout” on page 93, to set up new screen layouts.’, added.

Set Time:

Page 43

New paragraph created from the last two sentences.

‘NB. The date is shown by ***day, month and then year***, using a forward slash in between. Provide a space between the time and date to define them clearly.’

RS485

Page 51

Heading changed to: **Trendbus RS485**

Calibrate Inputs:

Page 54/55

This section has been re-written:

NB. Before attempting CJC calibration, ensure that you have the correct test fixtures as detailed in this procedure and you have saved both the recorder setups and layouts and any data for future reloading. Storage of the CJC constant in the memory location that allows it to be recalled if it is accidentally erased.

CJC Calibration setup

Function: CJC Calibration

Description: Calibration of the Cold Junction Compensator on the Analogue card

Each card must be calibrated individually in the recorder.

1. Ensure that the analogue card or cards, that are for calibration, have their input Dip Switches set to V. Refer to the User manual for details.
2. Setup the recorder input card(s) to the following configuration. From the Analogue In menu set up each of the following inputs as resistance thermometers (R/T). Use

the first analogue channel on each card fitted.
A1 is the first input if one analogue card is fitted, A9 is the first input on card two, A17 and A25 will be the first analogue inputs for cards three and four. Analogue cards three and four would only be available on the 180 mm recorder.

3. Setup the second inputs for each card as a thermocouple input, Type K. Analogue input A2 for card one, A10 for card two, A18 for card three and A26 for card four.
4. Enter the Pen menu, set up the first two pens of each card fitted to read 0-100°C. Pen 1 & Pen 2 for card one, Pen 9 & Pen 10 for card two, Pen 17 & Pen 18 for card three and Pen 25 & Pen 26 for card four.

When the recorder has been configured to the parameters laid out in items 1 to 4 the exit the setup, by using the Finish, Apply and Discard buttons.

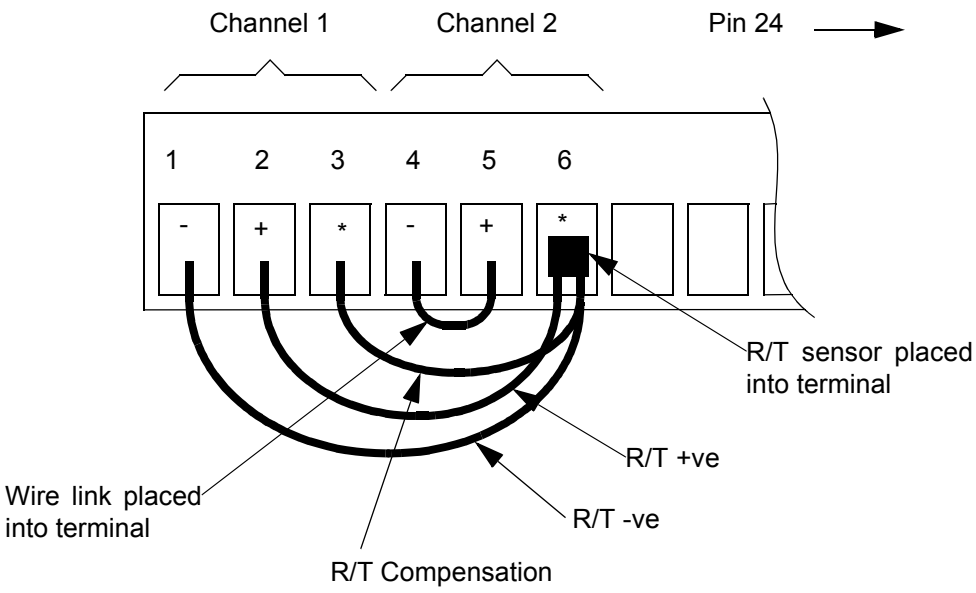
Wiring Details

Use a ***Resistance Thermometer*** sensor to measure the actual temperature of the Thermocouple connections at the rear of the unit. Deviation in temperature, between the measured T/C connections and the CJC, result in a calculated adjustment being made to the CJC temperature.

Figure 1 on page 7 shows how to wire an R/T across the first channel to measure the temperature of the terminal. This must be done on the first channel of each Universal card fitted. For this calibration ensure channel 1 is enabled as a Resistance Thermometer and any other channel (2) for the Type K Thermocouple.

.

Figure 1.



Once the recorder has been configured to these parameters check the pens displaying on the chart. Pen 1 for card one, Pen 9 for card two, Pen 17 for card three and Pen 25 for card four, should now be displaying the local ambient temperature. Pen 2 for card one, Pen 10 for card two, Pen 18 for card three and Pen 26 for card four, will show the CJC value for the recorder. Allow the recorder to stabilise for 45 minutes, once this has been archived calibrate the CJC.

CJC Calibration

Return to the first menu and select Setup, Edit, General, this will take you to the menu below. Select Factory:

In the Calibrate Input menu, the type of card, its slot position and how many channels are displayed. Inputs for each card are calibrated by scrolling down the menu, highlighting and selecting the desired input by use of the thumbwheel. Individual input channels can be switched on or off by selecting ***Inputs*** and entering a tick or a cross in the ***Calibrate*** option.

The CJC option is at the bottom of the universal menu, select and follow the on screen check list and instructions.

After calibration go back to the main menu and select the messages screen. Displayed here is the card slot position 1, 2, 3 or 4, and the temperature correction measurement, (C) identifies that the card in this slot position has been calibrated.

Filter

Page 56

New section added:

None, GCA or Damping (defaults to GCA)

Damping and GCA are both filters for noise reduction using different methods to smooth any significant or sudden change in the signal. Damping works by averaging sampled data over an allocated time. Whereas GCA looks at the previous and current readings, executes an algorithm depending on how large the difference is between the two readings and then calculates a new position immediately.

Square Root Extraction

Page 60

Function: To activate square root extraction

Type: On/off switch

Description: Enables square root extraction on a specific channel

Default: Disabled

This is a toggle switch which shows as a **x** when off, or a ✓ when active. It is a method for converting a non-linear signal into a linear scale.

The Square root extraction in the analogue input is used to linearise certain sensors that have a non linear output - for example in the calculation of flow. So when you check the Square root extraction in the Analogue input section it carries out the following calculation.

It ratios the analogue input range that you set, to 0 to 1.

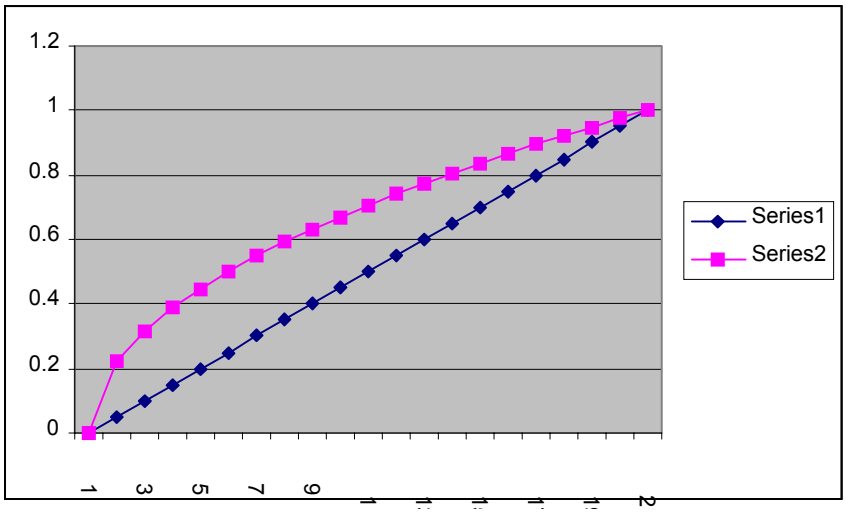
So any sensor input is represented by a number from 0 to 1.

We then take the square root.

We then re ratio the result back to the user set range.

The resultant linearisation carried out looks like this:

- Series 1 - Lineariser
- Series 2 - Raw field signal



Upscale Burn:

Page 63

'To identify which release of firmware is in the recorder, press the Main Menu button and select the About option. The firmware release will be on the top line. eg. Firmware = 01.ES (RELEASE).', added.

Temperature Calibration:

Page 64

This section has been re-written:

Function: Remove T/C and R/T inaccuracies

Description: To allow adjustment to T/C and R/T measurements

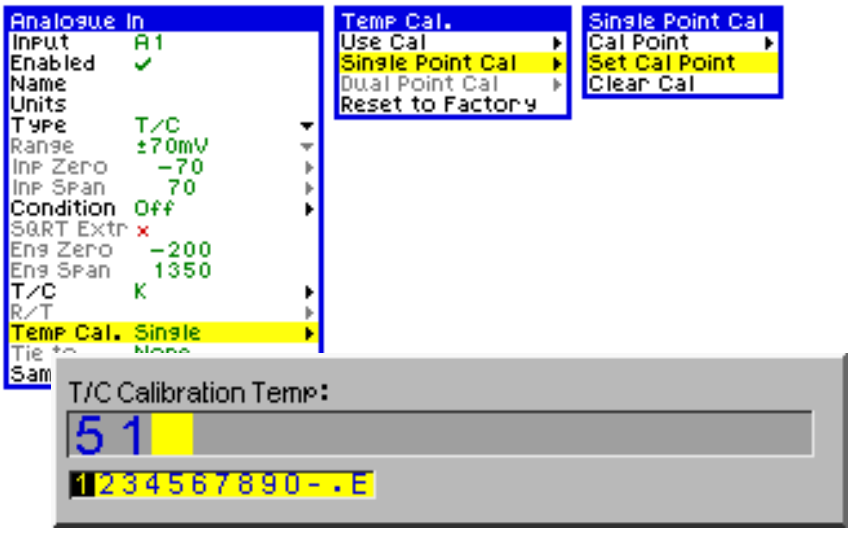
Both thermocouples and resistance thermometers may require additional ***Temperature Calibration*** to eliminate system measurement errors. A single point calibration can be set up for each input using ***Set Cal Point.***

Select the Main Menu button then Setup, Edit, Analogue In. Providing the ***Type*** of input has been set to Thermocouple then the ***Temp Cal.*** option will become active. To enable a calibration point to be set, highlight and select ***Use Cal***., this displays another menu to enable the ***Single Point Cal.*** option.

Single Point Cal. allows the operator to calibrate the temperature readings of a particular channel if necessary. ie. An oven has both a recorder and a controller reading the temperature. The recorder has a thermocouple reading 48°C and the controller is reading of 51°C, the recorder can be calibrated to the same as the controller by entering 51°C in the single point cal.

The will effect all readings on that particular input channel.

Calibration can be in °C, °F, or Kelvin.



Contact your supplier for further information on recorder calibration.

Screen Designer:

Page 106

New section added:

'Back up of custom Screen Layouts in Non-volatile memory'

The custom screen layouts will be stored in the Flash Memory of the recorder for those having the 8MByte processor card as well as the battery backed memory.

Maths expression:

Page 118

INSIDE: Inside range, P1 will equal 'x' when 'x' stays within the ranges of 'y' and 'z'. P1 will return '0' if 'x' is not within the ranges of 'y' and 'z'.

OUTSIDE: Outside range, P1 will equal 'x' when 'x' goes outside of the ranges of 'y' and 'z'. P1 will return '0' if 'x' is not outside the ranges of 'y' and 'z'.

AL: Alarm status, Allocates next available alarm number from 1 to 64 eg.AL3. P1 displays 1 when the alarm is active and 0 when in active.

Current Output Transmitters:

Page 123

The back panel shows 24Vdc 100mA TX SUPPLY. This has now changed to 24Vdc 200mA TX SUPPLY.

Voltage Output Transducers:

Page 124

The back panel shows 24Vdc 100mA TX SUPPLY. This has now changed to 24Vdc 200mA TX SUPPLY.

Questionnaire:

Page 137 Fax number has changed to +1 (215) 641 3400

This addendum should be used in conjunction with the Minitrend V5 and Multitrend Plus V5 User manual 43-TV-25-07 Issue 10.

For further information concerning any of the items in this addendum or the User manual, please contact your supplier.